

if not recognized and treated promptly, they almost always result fatally. Doctor Larson has presented this subject exceptionally well. His plea for adequate bacteriological studies at the time of operation cannot be supported too strongly, for the character of the bacterial infection undoubtedly influences the course of most of these cases. Our experience at Stanford Clinic is not unlike Doctor Larson's; but, in reviewing these cases, I note one complaint common to all—the sudden onset of sharp, severe pain in the right lower quadrant. It is reasonable to suppose that the exudate from the perforated gall-bladder would be kept away from the peritoneum of the anterior abdominal wall by the liver, transverse colon and omentum, but it would contact the peritoneum in the middle or lower abdominal quadrant, manifesting itself by severe pain in this area. All of our cases had cholelithiasis, obviously of long standing. Two of the gall-bladders were carcinomatous.

An accurate diagnosis of perforated gall-bladder is difficult, but I wish to call attention to the value of the Schilling differential blood count. This is done by differentiating the young polymorphonuclear cells with banded, unsegmented nuclei from the old polymorphonuclear cells with segmented nuclei. An increased number of young cells indicates a response on the part of the bone marrow to an urgent demand for more polymorphonuclears. This is always present in a severe inflammatory condition. It has been our invariable experience that any marked increase in the young polys indicates acute inflammation, and if the inflammation continues, the old polys may be destroyed faster than the new ones can be delivered to the circulating blood. When this occurs the total leukocyte count may actually come down, while the percentage of polys remains high and the percentage of young forms continues to increase. In our experience this has been a very valuable aid in deciding for or against operation.

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HARLAN SHOEMAKER, M.D. (1014 Wilshire Medical Building, Los Angeles).—Doctor Larson has presented twelve cases of rupture of the gall-bladder in which little, if any, defense has been made in the way of previous barriers of inflammatory exudates to protect the general abdominal cavity from a deluge of bile. These cases are difficult to diagnose, because the acute state of gall-bladder disease, which as a rule becomes chronic shortly, passes over with symptoms which are chiefly diagnosed as dyspepsia, gas, neuralgia, and even myocarditis.

As the disease progresses over many months or even years, gall-stones are developed. These gall-stones are without symptoms, or may be accompanied by a mild dyspepsia. Some 20 per cent can be diagnosed without x-ray. The accuracy of diagnosis is much greater when the dye is given intravenously than by mouth. About 20 per cent of the stones are nonfunctioning, and can only be diagnosed at operation. This is the type of gall-bladder that gives some pain in the back, and is frequently mistaken for anginal pain.

At the terminal stage, an acute, purulent, gangrenous inflammation from a stone in the gall-bladder, an acute pancreatitis or perforation from malignancy occurs, generally in the latter decades of life, and most frequently is preceded by the effects of symptoms over a long period of time. Gall-bladder colic that continues throughout the day is most frequently associated with an impacted stone. On the other hand, with the mild general symptoms that accompany a rupture of the gall-bladder in the earlier stages of gall-bladder disease, the average surgeon will advise the patient to wait until there is a sharper demarcation in his disease.

If this gall-bladder has ruptured, as Doctor Larson suggested, when the more advanced symptoms begin to appear, very little if any aid can be had by surgery or any other means at our disposal. Patients who are operated on within five days following an attack have generally recovered. Subsequent to that time, the disease is invariably fatal.

If the patients become seriously jaundiced, about 20 per cent will suffer from secondary hemorrhages. There is nothing that I know of that will ameliorate this condition except a blood transfusion.

In skilled hands, cholecystectomies should not have more than a one per cent mortality. Therefore, it is difficult to understand why the profession at large should not advise an exploratory procedure rather than to wait for a surgical impasse.

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STANLEY H. MENTZER, M.D. (450 Sutter Street, San Francisco).—Acute perforations of the gall-bladder, which occur as exacerbations of chronic cholecystic disease, characterized by a long history of biliary disturbance, rarely become diagnostic problems. But the sudden acute perforations which occur in a previously "silent" gall-bladder cause serious diagnostic errors. Equally misleading are those acute perforations which give little clinical evidence of their occurrence. Unfortunately, these are more common than are generally supposed. In the twelve cases recorded by Doctor Larson, two belong to the former group and one to the latter, with the result that a cholecystic lesion was preoperatively diagnosed in only two instances. I have previously reported that four of twenty-four perforations were not even operated upon, and six were not preoperatively considered perforations. More recently perforation was diagnosed in only three of fourteen instances. Doctor Larson's experience, and my own, seem to indicate that our conception of the clinical signs of gall-bladder perforation is erroneous. And indeed, ample evidence has accumulated to prove that acute cholecystitis may be present without the history, physical examination and laboratory aids being characteristic of acute abdominal disease.

To avoid the high mortality of 50 per cent reported by Doctor Larson and others, we must familiarize ourselves with the eccentricities of the clinical evidence in acute and perforative cholecystitis. Until that is accomplished, earlier operative exploration in every doubtful case is warranted.

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DOCTOR LARSON (closing).—I wish to thank the discussants for their excellent comments.

I will state again that this paper emphasizes the gall-bladder perforation that leads to generalized choleperitoneum; that the diagnosis is infrequent; that the surgical attack is too often not well planned, and that the mortality is much too high.

Doctor Chandler's suggestion that the Schilling blood test may be an important adjunct in establishing a proper diagnosis should not be overlooked.

The discussions by Doctor Shoemaker and Doctor Mentzer should be carefully studied, since they both have had much experience with this condition.

HEART DISEASE COMPLICATING PREGNANCY*

By CLARENCE A. DEPUY, M.D.
Oakland

DISCUSSION by James V. Campbell, M.D., Oakland; Bernard J. Hanley, M.D., Los Angeles; E. A. Royston, M.D., Los Angeles.

THE matter of heart disease as a complication of pregnancy is always one to give the obstetrician cause for serious thought. Is the patient's life in grave danger; is it necessary to interrupt pregnancy, or is it possible to decide whether there are circumstances under which the expectant mother may, without great risk, be permitted to go on to term?

* Read before the Obstetrics and Gynecology Section of the California Medical Association at the sixty-fourth annual session, Yosemite National Park, May 13-16, 1935.

QUESTIONS WHICH ARISE

At one time or another these are questions which we should like to know how to answer. If we interrupt the pregnancy and sacrifice the child to which life might with safety have been granted, we find ourselves liable to be visited with serious censure; if through undue optimism, we permit pregnancy to continue, and in consequence the embryo's host is sacrificed, we incur even more serious censure, and a degree of humiliation as well.

What shall we do? Are there any rules? Is there anybody of clinical experience to guide us to a safe decision? Is cesarean section indicated?

Out of experiences of his own, buttressed by a large number of reported cases of others, the answer seems clear enough to permit of its general formulation. These things, in the end, are always personal. It is only when we are confronted with them in our own practice, instead of abstract problems, they become concrete, requiring decision that does not permit of much delay.

Several years ago, the writer observed three cases of heart disease complicating pregnancy which made a lasting impression. The following is a brief summary of the cases, the supporting conclusions, and the practice which the writer has accepted as a safe guide in practice.

REPORT OF CASES

CASE 1.—The first case, a young woman six and one-half months pregnant, was seen at the hospital. Her condition was serious, as she had heart disease with broken compensation, complicating her pregnancy. She was under the care of a competent internist, but proceeded to get worse and died, undelivered. Her death was very tragic.

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CASE 2.—The second case was referred at this same time by a physician in a neighboring city, for an opinion as to whether she could go through a pregnancy without great risk to health and life. She gave a history of having had heart trouble for many years. Examination revealed that the heart was very large, and the murmurs were so pronounced that one hardly needed a stethoscope to hear them. She was pregnant about six weeks. Her compensation was so well established that she had no symptoms, such as dyspnea, cyanosis, edema, and fibrillation. I gave as my opinion that an attempt to carry through a pregnancy to term was fraught with great danger, as the added strain on her heart would probably break down her compensation. It was stated that if she was fortunate enough to get through her pregnancy, she might become a chronic invalid. This patient and her husband carefully considered the matter and decided to take the risk. The patient went through her pregnancy and labor without difficulty, and remained symptom-free afterward.

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CASE 3.—The third case, a patient thirty-four years of age, who had complained of heart trouble for many years, was seen when she was about three months pregnant. She had been under the care of a physician in a near-by city for ten years, and he had objected to her becoming pregnant. The physician died, and the patient, failing to take the proper precautions, became pregnant a few months later.

She complained of dyspnea and cyanosis on slight exertion. Examination revealed heart disease, which was rather poorly compensated, and she was pregnant three months. She was extremely anxious to have a

child, and we decided to try to carry her through. Under careful observation and rest, she carried her pregnancy to term and delivered her baby without difficulty. A few weeks after her labor, her heart decompensated and she was confined to her bed for several weeks. She was never able to do much after this break in compensation, and died about a year and a half later.

COMMENT

The above cases will serve to illustrate some of the facts it is proposed to point out.

The first is that patients with well compensated hearts may carry through pregnancy without great risk. Second, that patients with heart trouble poorly compensated will probably not be able to carry a pregnancy to term. Third, patients with poorly compensated heart trouble who carry their pregnancy to term, and pass through labor without mishap, may succumb later, and the strain of pregnancy will greatly shorten their lives.

The facts for the physician to know when these patients present themselves with heart disease complicating pregnancy, are: which cases may continue without causing great damage to their health and life, and which cannot.

CLASSIFICATION OF THE NEW YORK HEART ASSOCIATION

In 1924, the New York Heart Association¹ made a functional classification of cardiac patients that serves well to determine the prognosis with pregnancy. Cardiac patients are divided into three classes as follows:

Class 1. Patients with heart disease who are able to undertake ordinary physical activity without discomfort, such as palpitation and dyspnea, and who perform the test exercise without unusual tachycardia or dyspnea.

Class 2a. Patients whose ordinary activity is slightly limited because of the appearance of dyspnea, palpitation or fatigue, and who show somewhat excessive tachycardia and dyspnea after the test exercise.

Class 2b. Patients whose activity is greatly limited because of the appearance of dyspnea or palpitation, and who show marked tachycardia and dyspnea after the test exercise, or who are unable to complete it.

Class 3. Patients whose activity is so limited as to make them unable to walk about without dyspnea or palpitation, and who are so evidently dyspneic after such slight efforts as getting into bed or walking across the room as to make any other exercise test unnecessary.

Pardee² says this method of rating the functional capacity of cardiac patients may be well applied to pregnant women, and the writer has found the same to be true in his observation of these cases.

Mackenzie³ says that a perfectly sound heart may show a murmur, and "Nowhere has he been able to find a description which makes clear the difference between murmurs of serious significance and those which are innocent"; so in making a diagnosis of heart disease, the history and other signs and symptoms should be taken into consideration. Frequently, dyspnea on exertion, tachycardia and cyanosis, are the most prominent.

AFTER THE DIAGNOSIS, WHAT NEXT?

Having made the diagnosis of organic heart disease and pregnancy, it is then to be determined which cases can safely go through pregnancy.

This can be determined by the history of the case and physical findings, and classifying them according to the description previously mentioned. Those in Class 1 may go through pregnancy and labor without developing symptoms of a serious nature. Patients in Class 2a will probably go through pregnancy with a moderate amount of discomfort, such as dyspnea and tachycardia. Class 2b patients may *possibly* go through pregnancy, but their chances of a break in compensation are probable. *Class 3 patients cannot be carried through pregnancy*, and even the early interruption of pregnancy is fraught with danger.

Certain groups of heart trouble have always been thought to be the cause of serious symptoms, such as mitral stenosis and aortic disease; but Fitzgerald,⁴ in a report of one hundred twenty-six cases, one hundred seven had mitral disease, and of these, sixty-one showed evidence of stenosis. There were twelve cases of aortic disease. No patient died during pregnancy or labor.

Management During Pregnancy.—At the Sinai Hospital in Baltimore, Maryland, cardiac disease was found to be the second most common cause for obstetrical deaths, and in no class of patients is prenatal care so important as in this class of patients. Schuman⁵ says it is the acid test of her attending physician. Its principal object is to prevent heart failure, and in order to prevent this, patients are required to rest in bed at least two hours a day, and also avoid any exercise or excitement. On the first signs of any unusual symptoms, such as dyspnea, tachycardia, cyanosis, edema or cough, patients are put to bed and kept under observation. If in a reasonable period of time their symptoms do not subside, their pregnancy *must* be interrupted. If they reestablish their compensation, they may be permitted up and around again with very limited activities. The aid of an internist, interested in heart disease, is almost a necessary adjunct in the care of these patients. In discussing this subject with a cardiologist recently, he made the statement that "every break in compensation brings the exitus closer."

Management During Labor.—Having successfully passed through pregnancy to term, the next problem is the management of labor. A few days before labor is due, the patient should be hospitalized and put at complete rest. Labor may be induced or allowed to begin spontaneously. When the pains are well established and the cervix has begun to dilate, the patient is given morphin and this is to be repeated as necessary in the first stage. When the cervix is completely dilated and the head is on the perineum, the patient may be given gas and ether by a competent anesthetist, and the delivery completed by forceps. During the third stage of labor, care should be taken to prevent collapse, as the release of the intra-abdominal pressure following the strain of labor is apt to cause serious symptoms. Pituitrin should be given, and a tight binder applied to abdomen. The patient should be allowed to rest in the delivery room for one to two hours before being taken to her room.

Cesarean Section.—Cesarean section is not indicated in this class of cases except when there are complications that would require this method of delivery, for other reasons than the heart lesions. Fitzgerald⁴ reports deliveries of one hundred twenty-six patients, and only one had a cesarean section; this was in a multipara to permit of sterilization. Reis-Frankenthal⁶ report one hundred two cardiac patients, twenty of whom were delivered by cesarean section. Of these, only eleven were done on account of cardiac pathology, and of these eleven cases, ten were sterilized as a part of the operative procedure. They say that an incidence of 10 per cent of cesarean sections is too high for cardiac disease. If sterilization is desirable, this procedure is best done after the pregnancy has been terminated. According to reports, the tendency at the Michel Reese Hospital has been away from cesarean section, as the ideal method of delivering the cardiac patient. The desire to sterilize the cardiac patient should not sway the obstetrician. They report a mortality of 1.8 per cent in labor, and 2.8 per cent in the delivered group which was followed.

Postpartum Care.—Following her delivery, the cardiac patient should be kept at rest and not allowed up until she is symptom free. She should not be allowed to nurse her baby, as this puts an extra strain upon her. She must take the required amount of rest and avoid overexertion in the care of her baby. At the first sign of a break in her compensation, she should be put to bed.

Reis-Frankenthal⁶ report 15.71 per cent of seventy-one patients followed up after delivery had symptoms, or gave a history of cardiac embarrassment between the time of delivery and the follow-up. Fitzgerald, in his series of one hundred twenty-six cases, reports that one patient died six weeks after leaving the hospital.

SUMMARY AND CONCLUSIONS

Cardiac patients with pregnancy should be classified in order to determine their prognosis with pregnancy and labor.

Proper care and observation during pregnancy and labor are very important.

Cesarean section is not advised unless there are other indications requiring this method of delivery.

Rest and care after pregnancy are essential.

230 Grand Avenue.

REFERENCES

1. Committee on Cardiac Clinics of the New York Association for the Prevention and Relief of Heart Disease, Boston M. and S. J., pp. 189-762 (Nov. 15), 1923.
2. Pardee, H. E. B.: Cardiac Conditions Indicating Therapeutic Abortion, J. A. M. A., 103:1899 (Dec. 22), 1934.
3. Mackenzie, Sir James: Heart Disease and Pregnancy, Oxford University Press, 1921.
4. Fitzgerald, J. E.: Am. J. Obst. and Gynec., p. 29 (Jan.), 1935.
5. Schuman, William: Am. J. Obst. and Gynec., p. 29 (Jan.), 1935.
6. Reis, R. A., and Frankenthal, L. E.: Am. J. Obst. and Gynec., p. 29 (Jan.), 1935.

DISCUSSION

JAMES V. CAMPBELL, M. D. (350 Twenty-ninth Street, Oakland).—Doctor DePuy's paper has aptly brought

out the salient points to be considered when a physician is confronted by a pregnant woman with heart disease. To me, the most important section of the paper is the practical guide for determining the severity of the cardiac lesion and the subsequent treatment thereof.

The great majority of patients with heart murmurs can be grouped in Class 1, even though the murmurs may seem to indicate extensive damage. Actually, most of these patients are well compensated. This calls to mind one young primiparous patient who had had rheumatic heart disease with a resultant mitral regurgitation and mitral stenosis, a slight tachycardia, but otherwise well compensated. The heart-sounds on the right side sounded almost as loud as on the left. She went through an uneventful pregnancy and normal delivery.

It is after getting into the second class that the judgment of the attending physician becomes increasingly more taxed, and the necessity of having a competent cardiac specialist more urgent.

The general care of the mother, both before and after delivery, has been very adequately covered, but I will have to take exception to the essayist as to the type of delivery. With proper preparation and in competent hands, a cesarean section would seem to be less strain on a bad heart of a primipara than a normal delivery. Of course, if the patient has had previous deliveries, she could be allowed a test of labor and probably would have no undue trouble. She should be advised to definitely limit the number of pregnancies.

Individuals falling into Class 2B and Class 3 are, to all intents and purposes, to be treated similarly. If an early diagnosis of pregnancy is made, the patient should be therapeutically aborted; but if this is inadvisable because she is too far advanced in her pregnancy, a hysterotomy with resection of the tubes is indicated. Whether she should be allowed to go to term would depend entirely upon her reaction to adequate conservative treatment. In most cases the added strain of resecting the tubes following cesarean section is not sufficient to warrant requiring the patient to submit to a later operation. An illustrative case of Class 2B is that of a 35-year-old woman, first seen when five months pregnant. At twelve years of age she acquired typhoid fever, resulting in serious cardiac damage. She had had two miscarriages at two and five months, and two normal deliveries. Against the advice of her former physician, she yielded to her second husband's desire to have a child of his own. Toward the middle of her fifth month, she developed what was at first diagnosed as influenza and later diagnosed as left pyelitis. After cystoscopy showed both kidneys to be normal, a blood culture taken revealed a streptococcus vividus septicemia. She was given the usual supportive treatment, transfusions and sorocin, to no avail. About one month after the onset, she miscarried a two-pound fetus and a few days later died.

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BERNARD J. HANLEY, M. D. (1930 Wilshire Boulevard, Los Angeles).—We have used the classification of the American Heart Association for the past several years in the Los Angeles Maternity Service. The diagnosis and classifications were made in conjunction with our attending cardiologist. Our feeling has been that the results are better and the patients can be told what their outlook is, both for this and for future pregnancies.

In a recent review of our cases we found a surprisingly low percentage with organic heart disease. This is perhaps due to the small amount of rheumatic fever seen in Southern California.

I would like to add that a patient in labor with organic heart disease should have analgesia pushed to the limit of safety.

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E. A. ROYSTON, M. D. (8627 South Vermont Avenue, Los Angeles).—When the woman suffering from heart disease finds her problems complicated by expectant motherhood, and tells her story to her attending physician, she immediately places on him a responsibility

much graver than the ordinary. He must detail to her the dangers which lie ahead, not only during the pregnancy and delivery, but also during the ten to twenty years when the child will need the care and guidance of its mother.

The greatest desire of the average woman, whether she be the savage in the jungle or the queen upon the throne, is that she be allowed, by a kindly providence, to have at least one child. This natural instinct, however, must not be allowed to overinfluence the scientific judgment of her attending physician.

The matter of carrying a pregnancy to a successful termination is very much a personal one, not only to the expectant mother, but also to the attending physician. In these cases, where there is serious cardiac complication, there must be complete coöperation between the patient and the physician, or the work should not be undertaken.

Doctor De Puy has written a careful and beautiful paper, and has given us much food for thought. His Case No. 3 was truly tragic and pathetic; but after all, had not the woman reached her life's goal and ambition? There is still the human element that is hard to overcome. One of the greatest joys of my practice was to guide a serious cardiac case safely through pregnancy and delivery, and yet, after five years, to be able to report, "Mother and son still both doing well." The author's statistics and his method outlined for the care of the expectant mother complicated by cardiac disease are worthy of much study and attention.

THE LURE OF MEDICAL HISTORY[†]

MR. JOHN HUNTER ON GENERATION^{*‡}

By ARTHUR WILLIAM MEYER, M.D.
Stanford University

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HUNTER'S CLASSIFICATION OF MONSTERS

IN classifying monsters, Hunter further said: "Of monsters there are two principal classes, viz., Duplicity of Parts and Deficiency of Parts; and there is a third class, viz., Bad Formation. The first is, by much, the most frequent." (*Ibid.*, p. 248.)

"I should imagine that monsters were formed monsters at the very first formation for this reason, that all supernumerary parts are joined to their similar parts; for example, a head to a head, &c.

"But monsters, in some cases, may be said to be accidental, as the horn growing out of the forehead of the ox or cow.

"Is not the forked end of the fang of a tooth a species of monstrosity? and does not the manner of its formation show the nature of monsters, viz., two fangs being formed from a preternatural process taking place?

"We often find in the human body an appendix or process passing out from the small gut; and I

[†] A Twenty-Five Years Ago column, made up of excerpts from the official journal of the California Medical Association of twenty-five years ago, is printed in each issue of CALIFORNIA AND WESTERN MEDICINE. The column is one of the regular features of the Miscellany department, and its page number will be found on the front cover.

^{*} Because John Hunter occupies so large a place in the development of surgery, it is commonly but erroneously assumed that he had the title of Doctor of Medicine.

[‡] From the department of anatomy, Stanford University Medical School, Stanford University.

^{**} Part I of this paper was printed in the August issue of CALIFORNIA AND WESTERN MEDICINE, page 145; Part II, in the September issue, page 222; Part III, in the October issue, page 283. The present paper concludes the series.